COMPUTERIZED PLANNING FOR SWINE FARMS*

An Overview of a Simulation Model

INTRODUCTION

This swine farm computer model was developed to assist farmers in making, evaluating, and comparing long range plans concerning the organization and growth of their swine enterprise. Corn and soybean production is an integral part of the model. Cropping decisions are kept to a minimum, however, since the primary emphasis is the swine enterprise.

MODEL DEVELOPMENT

It is difficult to ascertain when the model or more correctly the idea for this model was conceived. It is clear, however, who the persons were that initiated the process that culminated in the model now generally referred to as the "Swine Simulator." Ludwig Eisgruber and John Kadlec were the prime movers behind efforts that brought this model to its fruition as a useful extension tool. A succession of three graduate students at Purdue University, George Lee, Bernard Sonntag, and myself, systematically proceeded from the conceptual, to the empirical, to the extension model.

THEORETICAL FOUNDATION

The model has a sound foundation found in the conventional theory of the firm in conjunction with, what I refer to as, The Esigruber Income Stability Hypothesis. Our conventional wisdom tells us that given a set of resources and the resource requirements and prices of products we can identify an optimum combination of products to be produced. This is best illustrated by referring to Figure 1.

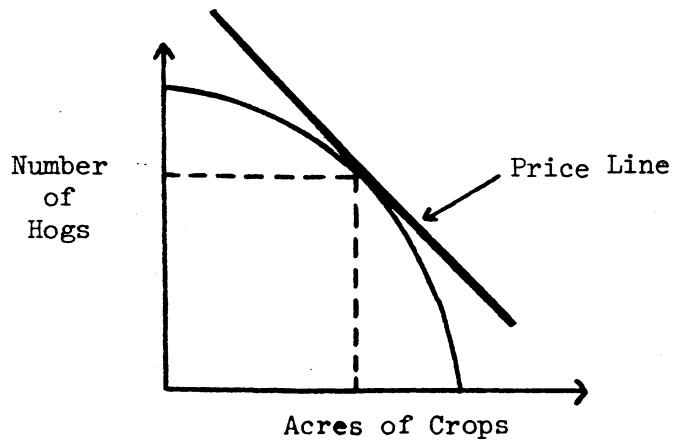


Figure 1.

* Paper presented at Regional Farm Management Workshop, May 18-19, 1976 at the University of Wisconsin at Madison, Wisconsin by Allan E. Lines, Assistant Professor, Department of Agricultural Economics at the Ohio State University.

The model, rather than using a two-dimensional production possibility set, generates an n-dimensional frontier utilizing the resource requirements and restraints specified by the farmer. Super-imposing a price plane on this surface would permit the identification of the optimum product mix. Unlike a L.P. model the simulator does not find a mathematical optimum. It selects a good or "near-optimal" solution.

It is Eisgruber's Income Stability Hypothesis that is used and is supported by the simulator in conjunction with a specific solution procedure that allows us to say the simulator finds a near-optimal solution to our product mix. The Income Stability Hypothesis is illustrated in Figure 2. and explained below.

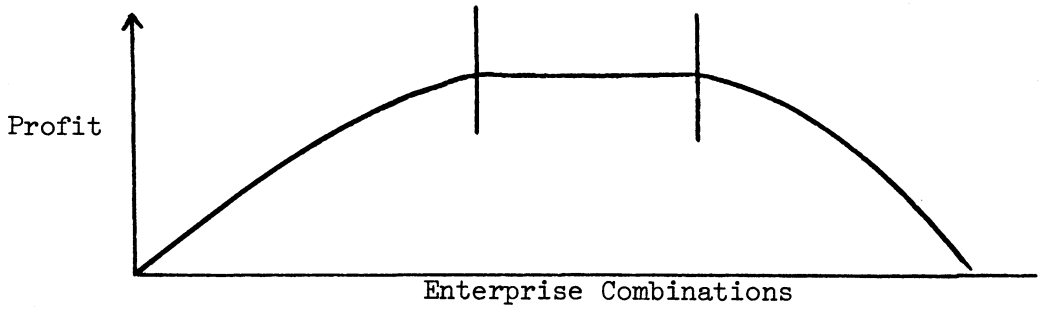
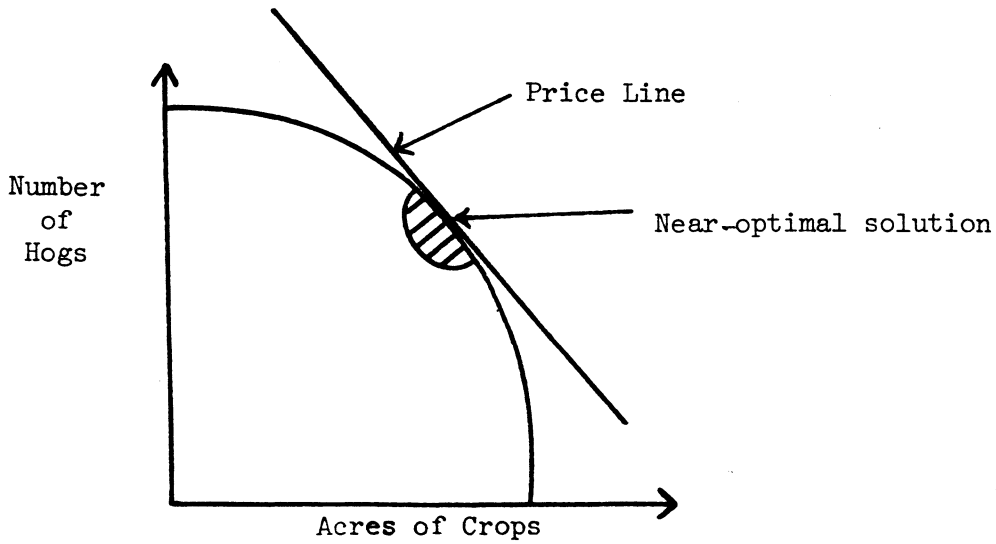


Figure 2.

The above diagram illustrates the hypothesis that "for a given farm there are clearly identifiable enterprise combinations (farm organization patterns) that will return less than maximum profit and there is a range of alternative organization patterns that will return some where near the maximum profit.

The swine simulator uses this hypothesis to generate a near-optimal product mix from the n-dimensional production frontier. This is illustrated in Figure 3.



The swine simulator finds this near-optimal solution by generating the n-dimensional production frontier, examining random points lying on or near this frontier, and selecting the point that maximizes the objective function. The objective function maximizes net worth at the end of five years. Unique to this program is the generation of a new production frontier each year of a five-year planning horizon as resources are accumulated and as the farmer respecifies his resources and restrainsts an annual basis.

EMPIRICAL TESTING

The model underwent considerable testing to examine its performance from a theoretical and practical point of view. It was found that it did in fact find a solution lying on or near the production frontier. It was also demonstrated that Eisgruber's Income Stability Hypothesis held up under examinations. The model was able to identify and reject those organization patterns that were clearly low profit plans. It was also able to identify and select one of a set of organization patterns all of which generated nearly the same level of net worth at the end of five years.

SCRUTINY BY EXPERTS

An important phase of model development was to bring it under the scrutiny of "experts." State Specialists and Extension field staff continually examined and re-examined the assumptions underlying the model, the input form and data being collected, the calculation procedures, and the printout. The input and printout were examined for organization and usability. After the model, input form, and printout were put into what was considered to be final form by University personnel the real experts--swine producers--were invited to use and evaluate the model.

After using the model in a workshop, the producers were asked to evaluate the model using an attitudinal response questionnaire. They were asked to respond to a series of statements by scoring them 0-16. Zero (0) being a very negative response, eight (8) being indifferent, and sixteen (16) a very positive response. A sample of their responses is shown below.

Statement	Average Response
I was able to accurately describe my farm to the computer	11
The results will be helpful in solving my problem	12
The computer model is not too complex	12

More swine producers should use the model	13
I want to use the model again	14
Producers could spend $50 to use the model before making a decision	14
The results are a reasonable projection of what might happen	12

The users, for the most part, have been favorably impressed with the model and its capabilities. Some of their suggestions have been incorporated into the model. The model, I believe, has passed the test and is a viable tool to assist decision makers.

MODEL DESCRIPTION

PURPOSE OF THE MODEL

The model, developed to assist in making decision, was designed to permit the farmer to examine and compare the results of:

1. Continuing his present operation
2. Making a specific change in his business
3. A "good" plan generated by the model

PROBLEMS THE MODEL CAN HELP SOLVE

The model is designed to provide assistance in answering questions in many problem areas on swine farms:

1. Size and rate of growth
2. Building selection
3. Scheduling
4. Enterprise selection
5. Impact of changes in the business

Some typical questions that might be asked are:

1. Should I sell feeder pigs, purchase feeder pigs, or farrow and finish hogs?
2. How large should my swine enterprise be?
3. What type of buildings should I construct?
4. What if I add fifty sows?
5. What if hog prices are $35 rather than $45?
6. What if I buy 160 acres?

MODES OF OPERATION

The model addresses four decisions:

1. Type of buildings
2. Size and rate of growth
3. Product
4. Scheduling

The model can be used in either of two operating modes to address these decisions -- 1) budgeting and, 2) optimizing. When used in "budgeting" mode the farmer makes all of the decisions listed above; the model does what the farmer directs. In "optimizing" mode the model can be used to make any or all of the above decisions; this mode is used to select a "good" or "near-optimal" plan for the swine enterprise. Figure 4 summarizes the model.

THE COMPUTER PRINTOUT

The printout is organized in three parts with an increasing amount of detail in each successive part. The farmer always receives the first two parts and can specify whether or not he wants the third. The three parts are:

1. Comparison of Alternative Plans -- one table that presents a summary of each plan at the end of the five-year planning horizon (see Table 1).
2. Annual Summaries -- two tables for each plan (see Tables 2 and 3). The first of these presents an annual summary of the farm plan for each year of the plan. The second table presents annual summaries for the swine enterprise.
3. Annual Details -- seven tables for each year of each plan (see Tables 4 through 10).

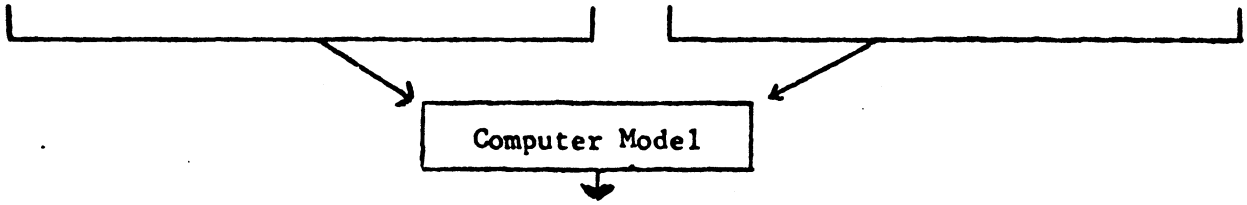
Model Purpose -- To aid farmers in making, comparing, and evaluating long range plans for their swine enterprise.

Conditions Specified By The Farmer

1. Current Resources
   a. Land
   b. Labor
   c. Buildings
   d. Livestock
   e. Machinery
   f. Other
2. Current Liabilities
3. Management Ability
   a. Feed Conversion
   b. Labor Efficiency
   c. Litter Size
   d. Mortality
   e. Cash Costs
   f. Maximum Size
   g. Prices
   h. Crop Yields
   i. Labor Supply
4. Risk Preference
   a. Maximum Debt/Asset Ratio
   b. Maximum Short Term Debt
   c. Maximum Intermediate Debt
   d. Maximum Long Term Debt
5. Cropping System
6. Living Expenses

Decisions To Be Made By The Farmer or The Model

1. What to Produce
   a. Produce Feeder Pigs
   b. Purchased Feeder Pigs
   c. Farrow and Finish Hogs
2. How Many Hogs to Produce
   a. Maximum Number
   b. Number Added Each Year
3. When to Produce
   a. Management System
      (1) 1-litter
      (2) 2-litter
      (3) 4-litter
      (4) 6-litter
      (5) 8-litter
      (6) 12-litter
      (7) 1-lot of feeders
      (8) 2-lots of feeders
      (9) 3-lots of feeders
      (10) Buy feeders bi-monthly
      (11) Buy feeders monthly
   b. Schedule of Hog Operations
4. What Building System
   a. Portable on Pasture
   b. Drylot
   c. Partial Slot
   d. Total Slot



Information for Each Plan---Present, Changed, and "Good" Plan

Annually

1. Acres of Crops
2. Number of Sows
3. Swine Housing Constructed
4. Farrowing or Purchasing Schedule
5. Net Worth
6. Percent Debt
7. New Loans
8. Loan Payments

Bi-Weekly

1. Crop Production, Sales, Use
2. Swine Sales and Purchases
3. Crop Labor
4. Hog Labor
5. Labor Hired
6. Crop Receipts and Expenses
7. Swine Receipts and Expenses
8. Cash Balance

Figure 4.

Table 1.

FARM BUSINESS MANAGEMENT
SWINE FARM SIMULATOR

NAME CASE FARM
DATE JAN 27, 1976

OHIO STATE UNIVERSITY
DEPARTMENT OF AGRICULTURAL ECONOMICS

FORM 6482

A COMPARISON OF ALTERNATIVE PLANS

ITEM	PRESENT	PLAN 2	PLAN 3
FARM PLAN - 1980.			
ACRES OF CORN	525.	525.	525.
ACRES OF SOYBEANS	175.	175.	175.
SOWS FARROWED	90.	150.	168.
PIGS SOLD	0.	0.	0.
HOGS SOLD	1354.	2412.	2715.
MANAGEMENT SYSTEM	6 LITTER	6 LITTER	12 LITTER
TOTAL HOURS	5767.	6929.	7736.
PROFITABILITY (5 YEAR TOTALS- AFTER RET TO OPERATOR LABOR)			
AV PCT RET ON TOT CAP BEFORE TAX	8.9	9.2	10.0
AV PCT RET ON NET WORTH BEFORE TAX	10.5	11.4	12.4
CHANGE IN NET WORTH AFTER TAX	276424.	289095.	310432.
BALANCE SHEET 1980.			
TOTAL ASSETS	1111553.	1184025.	1174418.
TOTAL LIABILITIES	75922.	145422.	114479.
NET WORTH	1035632.	1038603.	1059939.
SOLVENCY (5 YEARS)			
HIGHEST PCT DEBT	17.	22.	21.
LOWEST PCT DEBT	7.	13.	10.
LOANS (5 YEAR TOTALS)			
NEW LOANS	3538.	99625.	66559.
PRINCIPAL PAYMENT	85616.	112203.	110080.
INTEREST PAYMENT	35608.	61087.	54774.

Table 2.

PRESENT PLAN
CASE FARM
FARM PLAN SUMMARY

ITEM	1976.	1977.	1978.	1979.	1980.
FARM PLAN -					
ACRES OF CORN	525.	525.	525.	525.	525.
ACRES OF SOYBEANS	175.	175.	175.	175.	175.
SOWS FARROWED	90.	90.	90.	90.	90.
PIGS SOLD	0.	0.	0.	0.	0.
HOGS SOLD	1296.	1354.	1354.	1354.	1354.
MANAGEMENT SYSTEM	6 LITTER	6 LITTER	6 LITTER	6 LITTER	6 LITTER
TOTAL HOURS	5835.	5800.	5800.	5767.	5767.
PART-TIME HOURS	121.	121.	121.	121.	121.
PROFITABILITY					
OPERATING RECEIPTS					
SWINE	142197.	118082.	103322.	118082.	132842.
CROPS	178587.	118775.	116395.	116395.	116395.
OTHER	1812.	10689.	14031.	17806.	21973.
TOTAL	322595.	247546.	233748.	252283.	271210.
OPERATING EXPENSES					
SWINE	40057.	41530.	43508.	45486.	47463.
CROPS	78090.	75452.	77559.	79706.	81899.
OTHER	9362.	8462.	7468.	6084.	6042.
TOTAL	127508.	125444.	128536.	131275.	135404.
NET OPERATING INCOME	195087.	122102.	105213.	121008.	135806.
PCT RET ON TOT CAP	11.3	8.3	6.9	8.7	9.6
PCT RET ON NET WORTH	14.0	9.9	8.0	10.0	10.6
CHANGE IN NET WORTH	66347.	48478.	42637.	57621.	61343.
BALANCE SHEET					
TOTAL ASSETS	966554.	998104.	1023907.	1067399.	1111553.
TOTAL LIABILITIES	141000.	124072.	107239.	93110.	75922.
NET WORTH	825554.	874032.	916668.	974289.	1035632.
SOLVENCY					
PERCENT DEBT	17.	13.	11.	9.	7.
LOANS					
NEW LOANS	0.	72.	189.	2953.	324.
PRINCIPAL PAYMENT	17000.	17000.	17022.	17082.	17512.
INTEREST PAYMENT	9000.	8100.	7107.	5722.	5680.
PERSONAL ITEMS					
FAMILY LIVING	23372.	23506.	24455.	27142.	31685.
INCOME TAX AND S.S.	39871.	33500.	27355.	33780.	41759.
INVESTMENT	0.	0.	0.	0.	0.

Table 3.

PRESENT PLAN
CASE FARM
SWINE ENTERPRISE SUMMARY

ITEM	1976.	1977.	1978.	1979.	1980.
ENTERPRISE DESCRIPTION					
SOWS FARROWED	90.	90.	90.	90.	90.
PIGS SOLD	0.	0.	0.	0.	0.
HOGS SOLD	1296.	1354.	1354.	1354.	1354.
MANAGEMENT SYSTEM	6 LITTER	6 LITTER	6 LITTER	6 LITTER	6 LITTER
TOTAL HOURS	4263.	4228.	4228.	4228.	4228.
INVESTMENT					
LIVESTOCK	50377.	40032.	35028.	39897.	44884.
BLDGS AND EQUIP	18624.	14418.	10212.	6006.	1800.
TOTAL	69001.	54450.	45240.	45903.	46684.
NEW BUILDINGS					
FARROWING					
TYPE					
CAPACITY	0.	0.	0.	0.	0.
COST	0.	0.	0.	0.	0.
GESTATION					
TYPE					
CAPACITY	0.	0.	0.	0.	0.
COST	0.	0.	0.	0.	0.
NURSERY					
TYPE					
CAPACITY	0.	0.	0.	0.	0.
COST	0.	0.	0.	0.	0.
FINISHING					
TYPE					
CAPACITY	0.	0.	0.	0.	0.
COST	0.	0.	0.	0.	0.

LIMIT TO EXPANSION
THE MODEL WAS RUN AS A BUDGET ONLY - YOU CONTROLLED THE GROWTH

Table 5.

PLAN 2
ADD 60 SOWS
SWINE ENTERPRISE SUMMARY

ITEM	1976.	1977.	1978.	1979.	1980.
ENTERPRISE DESCRIPTION					
SOWS FARROWED	120.	120.	150.	150.	150.
PIGS SOLD	0.	0.	0.	0.	0.
HOGS SOLD	1671.	1919.	2246.	2412.	2412.
MANAGEMENT SYSTEM	6 LITTER	6 LITTER	6 LITTER	6 LITTER	6 LITTER
TOTAL HOURS	4440.	4501.	5323.	5389.	5389.
INVESTMENT					
LIVESTOCK	66889.	53376.	58498.	66720.	75060.
BLDGS AND EQUIP	80024.	72818.	102348.	92518.	82688.
TOTAL	146913.	126194.	160846.	159238.	157748.
NEW BUILDINGS					
FARROWING					
TYPE	CRT-SLT FA		CRT-SLT FA		
CAPACITY	40.	0.	10.	0.	0.
COST	40000.	0.	12000.	0.	0.
GESTATION					
TYPE	DRYLOT G		DRYLOT G		
CAPACITY	30.	0.	40.	0.	0.
COST	2100.	0.	3360.	0.	0.
NURSERY					
TYPE	SLATTED N		SLATTED N		
CAPACITY	400.	0.	100.	0.	0.
COST	16000.	0.	4800.	0.	0.
FINISHING					
TYPE	SLATTED FD		SLATTED FD		
CAPACITY	250.	0.	250.	0.	0.
COST	16000.	0.	19200.	0.	0.

LIMIT TO EXPANSION
THE MODEL WAS RUN AS A BUDGET ONLY - YOU CONTROLLED THE GROWTH

Table 5.

PLAN 2
ADD 60 SOWS
SWINE ENTERPRISE SUMMARY

ITEM	1976.	1977.	1978.	1979.	1980.
ENTERPRISE DESCRIPTION					
SOWS FARROWED	120.	120.	150.	150.	150.
PIGS SOLD	0.	0.	0.	0.	0.
HOGS SOLD	1671.	1919.	2246.	2412.	2412.
MANAGEMENT SYSTEM	6 LITTER	6 LITTER	6 LITTER	6 LITTER	6 LITTER
TOTAL HOURS	4440.	4501.	5323.	5389.	5389.
INVESTMENT					
LIVESTOCK	66889.	53376.	58498.	66720.	75060.
BLDGS AND EQUIP	80024.	72818.	102348.	92518.	82688.
TOTAL	146913.	126194.	160846.	159238.	157748.
NEW BUILDINGS					
FARROWING					
TYPE	CRT-SLT FA		CRT-SLT FA		
CAPACITY	40.	0.	10.	0.	0.
COST	40000.	0.	12000.	0.	0.
GESTATION					
TYPE	DRYLOT G		DRYLOT G		
CAPACITY	30.	0.	40.	0.	0.
COST	2100.	0.	3360.	0.	0.
NURSERY					
TYPE	SLATTED N		SLATTED N		
CAPACITY	400.	0.	100.	0.	0.
COST	16000.	0.	4800.	0.	0.
FINISHING					
TYPE	SLATTED FD		SLATTED FD		
CAPACITY	250.	0.	250.	0.	0.
COST	16000.	0.	19200.	0.	0.

LIMIT TO EXPANSION
THE MODEL WAS RUN AS A BUDGET ONLY - YOU CONTROLLED THE GROWTH

Table 6.

PLAN 3
COMPUTER PLAN
FARM PLAN SUMMARY

ITEM	1976.	1977.	1978.	1979.	1980.
FARM PLAN -					
ACRES OF CORN	525.	525.	525.	525.	525.
ACRES OF SOYBEANS	175.	175.	175.	175.	175.
SOWS FARROWED	168.	168.	168.	168.	168.
PIGS SOLD	0.	0.	0.	0.	0.
HOGS SOLD	1972.	2715.	2715.	2715.	2715.
MANAGEMENT SYSTEM	12 LITTER	12 LITTER	12 LITTER	12 LITTER	12 LITTER
TOTAL HOURS	7075.	7768.	7768.	7736.	7736.
PART-TIME HOURS	314.	317.	317.	317.	317.
PROFITABILITY					
OPERATING RECEIPTS					
SWINE	210847.	228034.	199530.	228034.	256539.
CROPS	133470.	73170.	73170.	73170.	73170.
OTHER	1408.	7335.	9213.	12845.	17688.
TOTAL	345726.	308539.	281913.	314050.	347397.
OPERATING EXPENSES					
SWINE	67367.	95921.	87417.	91391.	95365.
CROPS	77417.	75606.	78679.	80857.	83082.
OTHER	9941.	14677.	13168.	11204.	10530.
TOTAL	154725.	186205.	179264.	183452.	188977.
NET OPERATING INCOME	191000.	122335.	102649.	130597.	158420.
PCT RET ON TOT CAP	16.2	8.0	5.6	9.3	11.1
PCT RET ON NET WORTH	21.0	10.0	6.8	11.2	12.9
CHANGE IN NET WORTH	89768.	44500.	34742.	66055.	75367.
BALANCE SHEET					
TOTAL ASSETS	1042787.	1064620.	1076106.	1121003.	1174418.
TOTAL LIABILITIES	203512.	180845.	157589.	136431.	114479.
NET WORTH	839275.	883775.	918517.	984572.	1059939.
SOLVENCY					
PERCENT DEBT	21.	18.	15.	13.	10.
LOANS					
NEW LOANS	62512.	274.	302.	3083.	389.
PRINCIPAL PAYMENT	17000.	22940.	23558.	24241.	22341.
INTEREST PAYMENT	9000.	13726.	12216.	10253.	9579.
PERSONAL ITEMS					
FAMILY LIVING	25974.	24226.	24161.	27496.	32658.
INCOME TAX AND S.S.	67783.	39464.	24976.	36564.	51660.
INVESTMENT	0.	0.	0.	0.	0.

Table 7.

PLAN 3
COMPUTER PLAN
SWINE ENTERPRISE SUMMARY

ITEM	1976.	1977.	1978.	1979.	1980.
ENTERPRISE DESCRIPTION					
SOWS FARROWED	168.	168.	168.	168.	168.
PIGS SOLD	0.	0.	0.	0.	0.
HOGS SOLD	1972.	2715.	2715.	2715.	2715.
MANAGEMENT SYSTEM	12 LITTER	12 LITTER	12 LITTER	12 LITTER	12 LITTER
TOTAL HOURS	5503.	6196.	6196.	6196.	6196.
INVESTMENT					
LIVESTOCK	102224.	81554.	71304.	81554.	91805.
BLDGS AND EQUIP	74784.	67961.	61138.	54315.	47493.
TOTAL	177007.	149515.	132442.	135870.	139297.
NEW BUILDINGS					
FARROWING					
TYPE	CRT-SLT FA				
CAPACITY	30.	0.	0.	0.	0.
COST	30000.	0.	0.	0.	0.
GESTATION					
TYPE	DRYLOT G				
CAPACITY	80.	0.	0.	0.	0.
COST	5600.	0.	0.	0.	0.
NURSERY					
TYPE	SLATTED N				
CAPACITY	300.	0.	0.	0.	0.
COST	12000.	0.	0.	0.	0.
FINISHING					
TYPE	PT.SLAT FD				
CAPACITY	399.	0.	0.	0.	0.
COST	21000.	0.	0.	0.	0.

LIMIT TO EXPANSION

1976.	MAN TIME, PERIOD	16.
1977.	MAN TIME, PERIOD	16.
1978.	MAN TIME, PERIOD	16.
1979.	MAN TIME, PERIOD	16.
1980.	MAN TIME, PERIOD	16.

Table 8.

PLAN 2
ADD 60 SOWS
BEGINNING INVENTORY - 1976.

ITEM	YEAR PURCHASED	YEAR REPLACE	CAPACITY (AMOUNT)	VALUE
ASSETS				
CASH				
CASH ON HD				29000.
SWINE				
SOWS			100.	16875.
FEEDERS			400.	30000.
CROPS				
CORN			40200.	94470.
EQUIPMENT				
PLOW 6-16	1971.			1146.
DISC 14 FT	1973.			1318.
CULT 10 FT	1972.			506.
NH-3 KNIFE	1969.			435.
CHSL 15 FT	1973.			1130.
CULT 30 6R	1968.			433.
CULT 30 6R	1968.			433.
C PL 30 6R	1970.			1215.
TRA 40HP	1970.			2649.
TRA 80HP	1971.			4462.
TRA 110HP	1972.			7391.
COMB 30 6R	1972.			13796.
LAND				
OWN LAND			700.	630000.
SWINE BUILDINGS				
DRYLOT G		1981.	50.	1167.
DRYLOT G		1981.	55.	1283.
POLE FD		1984.	200.	4800.
POLE FD		1981.	250.	3750.
POLE FD		1981.	150.	2250.
OTHER ASSETS				59000.
TOTAL ASSETS				907507.
LIABILITIES				
INTERMEDIATE				
PREVIOUS DEBT				51000.
LONG				
PREVIOUS DEBT				107000.
TOTAL LIABILITIES				158000.
NET WORTH				749507.

Table 9.

PLAN 2
ADD 60 SOWS
LABOR FLOW - 1976.

2 WK. PERIOD NO.	BEGIN	HOURS HOGS	CROPS	TOTAL	EXCESS FULLTIME	NEEDED PARTTIME
1.	JAN 1	154.	0.	154.	86.	
2.	JAN 15	154.	0.	154.	86.	
3.	JAN 29	171.	0.	171.	69.	
4.	FEB 12	171.	0.	171.	69.	
5.	FEB 26	159.	0.	159.	81.	
6.	MAR 12	159.	0.	159.	81.	
7.	MAR 26	165.	56.	221.	235.	
8.	APR 9	165.	70.	235.	221.	
9.	APR 23	179.	92.	271.	185.	
10.	MAY 7	179.	124.	303.	153.	
11.	MAY 21	179.	114.	293.	163.	
12.	JUNE 4	179.	84.	262.	194.	
13.	JUNE 18	179.	15.	194.	46.	
14.	JULY 2	196.	0.	196.	44.	
15.	JULY 16	196.	0.	196.	44.	
16.	JULY 30	159.	0.	159.		39.
17.	AUG 13	159.	0.	159.		39.
18.	AUG 27	159.	0.	159.	81.	
19.	SEPT 10	159.	13.	171.	285.	
20.	SEPT 24	165.	113.	277.	179.	
21.	OCT 8	165.	194.	359.	97.	
22.	OCT 22	179.	213.	392.	64.	
23.	NOV 5	179.	262.	441.	15.	
24.	NOV 19	179.	195.	374.	82.	
25.	DEC 3	179.	26.	205.	35.	
26.	DEC 17	179.	0.	179.	61.	
	TOTALS	4440.	1572.	6012.	2658.	77.

Table 10.

PLAN 2
ADD 60 SOWS
CROPS FLOW - 1976.

PERIOD		CORN				SOYBEANS	
NO.	BEGIN	PRODUCED	FED	SOLD	BALANCE	PRODUCED	SOLD
1.	JAN 1	0.	712.	0.	39488.	0.	0.
2.	JAN 15	0.	712.	0.	38777.	0.	0.
3.	JAN 29	0.	800.	0.	37977.	0.	0.
4.	FEB 12	0.	800.	0.	37176.	0.	0.
5.	FEB 26	0.	705.	0.	36471.	0.	0.
6.	MAR 12	0.	705.	0.	35766.	0.	0.
7.	MAR 26	0.	1087.	0.	34680.	0.	0.
8.	APR 9	0.	1011.	0.	33669.	0.	0.
9.	APR 23	0.	1276.	0.	32392.	0.	0.
10.	MAY 7	0.	1276.	0.	31116.	0.	0.
11.	MAY 21	0.	1276.	0.	29839.	0.	0.
12.	JUNE 4	0.	1276.	0.	28563.	0.	0.
13.	JUNE 18	0.	1276.	0.	27286.	0.	0.
14.	JULY 2	0.	975.	0.	26312.	0.	0.
15.	JULY 16	0.	975.	0.	25337.	0.	0.
16.	JULY 30	0.	663.	0.	24674.	0.	0.
17.	AUG 13	0.	663.	0.	24011.	0.	0.
18.	AUG 27	0.	663.	0.	23348.	0.	0.
19.	SEPT 10	0.	663.	0.	22684.	578.	0.
20.	SEPT 24	5775.	1011.	0.	27448.	2310.	0.
21.	OCT 8	14438.	1011.	0.	40875.	1733.	0.
22.	OCT 22	17325.	1276.	0.	56923.	1155.	5775.
23.	NOV 5	14438.	1383.	0.	69978.	0.	0.
24.	NOV 19	5775.	1383.	0.	74370.	0.	0.
25.	DEC 3	0.	1383.	0.	72987.	0.	0.
26.	DEC 17	0.	1383.	53077.	18527.	0.	0.
	TOTALS	57750.	26346.	53077.		5775.	5775.

USE OF THE MODEL

The model has been successfully used in a number of Swine Management Workshops during the past three years. Despite its apparent usefulness, the model has not experienced acceptance and use outside of Indiana and Ohio. There is one primary reason for this; the complexity of the model. It is not fool proof. If something results in an infeasible or erroneous solution a person very knowledgeable with the program must trace down the problem. Most State Specialists cannot afford to take the time to learn the intricacies of the model so that they can do this.

FUTURE DEVELOPMENTS

The model is now being revised to reduce its complexity with the hope that it will gain wider acceptance throughout the North Central Region. Changes now being incorporated are to eliminate the crop enterprises and improve the financial planning aspects of the swine enterprise. The complexion of the model will change from a swine farm to a swine enterprise. The basic questions of enterprise planning, size and growth, scheduling, and building selection will remain. The model's capability to compare the present plan with a planned change and a "good" plan will be retained. These changes will reduce the complexity of the model and persons in other states should be able to use the model with little difficulty.